Whitchurch Schools Project

PROJECT BRIEF

Private & Confidential

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INTERNAL MEMO

FROM: Mike Denison, Project Director, pd global
TO: Pat Malloy, Project Manager, pd global
DATE: 20 October

Dear Pat,

I'm really glad you are able to work on the Whitchurch Schools project. Our relationship with Whitchurch County Council is potentially a very valuable one in the long term, and this project is a good opportunity to build on our reputation with them. With the inception phase completed, it is your job now to manage the design phases through to the completion of the tender process. As usual, we must keep careful control of the cashflow during these phases.

Esther Platt, the Council Education Officer, is the main client contact there. From what I've heard, she is quite easy to deal with, but obviously you should keep her up-to-date on progress and with your estimates of the final success measures.

As ever, the challenges of this project will be about managing and co-ordinating a range of specialist skills, and success will be assessed using our new Project Execution Framework: i.e. the usual financial and schedule measures, but also combining these with a customer satisfaction rating and an overall carbon footprint rating.

Please find in the rest of this document various bits of information about the resources and the tasks that the project will involve.

I would, as usual, appreciate regular updates on how the project is progressing, and in particular an update on the net cash position after each milestone invoice is paid.

Best of luck and with kind regards, Mike

BACKGROUND

The Whitchurch Schools Project involves the amalgamation of 3 neighbouring primary schools (Schools A, B & C) within the Whitchurch County Council district. Two of these existing schools have been described by the inspectors as "seriously failing". With class sizes in both of these well below optimum, a decision was taken to use the site of School A to develop a completely new 12 class primary school that would replace all three of the existing schools. The pupils from School A will be "decanted" to Schools B and C during the construction-on-site phase, and this should mean that the temporary arrangements should only last one academic year. The feasibility studies for this project took over 2 years to carry out, and were prompted partly by a number of housing developments and changing demographics in the region. The construction phase will begin with the de-construction of the old school, which should occur very rapidly, unless we get the wrong results from the asbestos checks.

In July, PD Global was awarded the contract to carry out the design and tender action phases of the Whitchurch Schools Project. The inception phase was completed in early October, and our work is due to begin on the 1st November. The construction period is currently being estimated to last 12-15 months with a key objective of the new school being fully operational for the academic year starting in September of the year after next. This means, therefore, that we are under pressure to complete our phases in time to allow this, and the client has already indicated that they want us to finish it in no more than 30 weeks.

Our contract with WCC is a traditional fixed price contract.

FINANCIALS

The overall budget for the Whitchurch Schools projects is £3.25 million. Our agreed fee for performing the design and tender action phases represents approximately 12% of this, i.e. £400,000. This £400,000 income is offset by a number of cost elements:

- Resource costs (staff salaries and contractor costs)
- Expenses (miscellaneous costs)
- Overhead allocation (£4,000 per week)

These costs will be affected by the duration of the project and the resources that are allocated to each task. Our target margin is 8%. The Project Director, therefore, expects a total spend of £368,000 (total resource costs and expenses, plus overhead, plus expected interest charges).

You will be able to invoice the following amounts:

- From the work on preliminary activities we have already received 5% of the fee (£20,000)
- **Milestone 1:** when task A6 is complete, invoice for 25% of the agreed fee (£100,000)
- **Milestone 2:** when task C5 is complete, invoice for 40% of the agreed fee (£160,000)
- **Milestone 3:** at the end of the project (i.e. when task D5 is complete) you can invoice for the remaining 30% of the agreed fee (£120,000)

Carbon Rating Bonus

The Whitchurch project will be assessed using a Carbon Rating % that is based on a sophisticated calculation of the projected whole lifecycle carbon footprint of the building: i.e. a combination of "embodied", "operational" and "de-commissioning" carbon impacts. Even with a fixed construction budget, the cleverness of the design can make a big difference to the overall CO^2 impact of the building: e.g. the extent to which natural ventilation is used for cooling, the types and sources of materials used, the use of natural light, etc.
With funding provided by the Department for Schools, Whitchurch Council have agreed to pay these Carbon Rating bonuses: Final Carbon Rating: ≥ 90% = £10,000; ≥ 95% = £20,000

Invoice payment and timing penalties

Invoices will be paid 2 weeks after receipt (as long as the milestone has been met). Invoices that are sent too early will not be paid, and will need to be re-issued later. If an invoice is sent at an inappropriate time, the following penalties will be incurred:

- Too early: £1,000
- Too late: £500

Note: penalties are deducted from the net cash position, not from the agreed invoice amounts

Interest charges

When your net cash position is negative, the following charges will be deducted:

- If net cash position is within agreed limit of £150,000 – 0.2% per week
- If net cash position exceeds agreed limit of £150,000 – 0.4% per week

This means that the total interest charge is likely to be in the region of £8,000

LOGICAL FLOW WITHIN THE PROJECT

The consultations (task A1) commence the project, with both developing the scheme design to council standards (A2) and the checking of the engineers' proposals for the scheme (A3) following in parallel. Neither establishing the availability of utilities (A4), nor running the client design meetings (A5) can start until the checking of the engineers' proposals are complete. When these two activities (A4 and A5) are complete, the detailed planning application (A6) can be made.

Before the architectural design (B1) can start, both the development of the scheme to council standards (A2) and the detailed planning application (A6) have to be complete. When activity (B1) starts, supervision and co-ordination of the full engineering design (B2) can also start one week later. The following activities can commence when (B2) is complete: liaison with the education department on finishes (B3), and developing the Construction Design & Management (CDM) regulations compatible work plan (B4).

On completion of these two activities (B3 and B4), agreement of suppliers and materials with the council can then start (B5).

Work can then begin on the preparation of the working drawings (C1) providing both (B1) and (B5) are complete. Specifications (C2) can start, with a one week delay, at the time that (C1) starts. Once the specifications are complete, the internal design reviews are run and signed off (C3). Starting the internal design reviews also allows the preparation of bills of quantities (C4) to start but with a delay of one week. Application for and approval of building regulations (C5) requires the completion of working drawings (C1) and the internal design reviews (C3). Following approval, the pre-tender safety file can be issued (C6). Subsequently, the tender list (D1) can then be prepared.

Preparation of pre-tender estimates (D2) directly follows the completion of the bills of quantities (C4). Once the pre-tender estimates are prepared, the tender package can be submitted to the tenderers (D3) but this also requires the preparation of the tender list (D1).

When the tender package has been given to the tenderers and any queries have been cleared, the tenders are returned and they are then appraised and a tender report is written (D4); after which, arrangements for letting the contract with the client can be made and also the pre-start meeting can be held (D5).

WORKPACKAGES AND TASKS

Our work on the Whitchurch Schools Project has been segmented into 4 workpackages:

Workpackage A: Proposals

The key deliverables of Workpackage A are: client approval of the scheme design, and planning consent being granted.

Workpackage B: Final Proposals

Workpackage B is primarily about developing and agreeing with the client the detailed designs, and subsequently agreeing on the suppliers and materials.

Workpackage C: Production Information & Tender Documents

Workpackage C is firstly about translating the Detailed Designs into a detailed "shopping list" of materials that has sufficient detail for the tender process to be done. This workpackage also includes the crucial task of applying for the building regulations.

Workpackage D: Tender Action (& Mobilisation)

The broad deliverable from Workpackage D is the identification and evaluation of potential contractors and specialists for the construction of the project.

see table below for details of all the tasks

Task	Expenses budget notes	Planned Duration	Weekly Variability
(A1) Consultations			
This task involves meeting various stakeholders: the school governors and staff, other departments in the County Council such as property and planning. It also involves carrying out checks on any potential transport and ownership issues. There is no specialist skill required to perform this task, but experience of the types of issues that it can identify is always useful. Usually performed by the senior architect, it can be done by a junior architect but with a slightly higher chance of the issues being missed.	A budget to cover things like investigations and travel expenses needs to be allocated; £2,000 is the figure here; with a weekly cost overrun of £500 if it takes longer than the 2 weeks	2 Weeks	Weekly progress is a bit unpredictable on this task: it can be less but also more than planned
(A2) Design Scheme to Council Standards			
This key task in any design project involves the architectural team firstly reviewing the outline proposals and any suggestions that the client has made. It involves preparing a scheme design that should illustrate the basic size and character of the project in sufficient detail for the client to comment on things like the materials and appearance.	Various expenses need to be budgeted for during this task, including reprographics costs and further travel expenses; around £3,000 in total	6 Weeks – with the potential to reduce this to 4 Weeks by allocating a total expenses budget of £21,000	Weekly progress can vary up or down on this task too
(A3) Check Engineers Proposals			
Continually reviewing, verifying and checking the overall design is a crucial task. It is ideally performed by the senior architect, but sometimes by a less experienced architect on the team, particularly if the more expensive resource is not available.	This task shouldn't involve any expenses outside the staff costs	2 Weeks	This is another task where weekly progress can be better or worse than planned
(A4) Establish Utilities Availability & Provision			
Again, if money and availability were not an issue, you would want a senior architect on this task. The junior architect should be able to do it, but with reduced certainty of completing it as scheduled.	£8,000 is required for investigations and other expenses with a weekly cost overrun of £1000	2 Weeks	Weekly progress can vary up or down on this task too
(A5) Run Client Design Meetings			
This task involves preparing for and running the meetings to explain and discuss the scheme design with the client.		2 Weeks	This is another task where weekly progress is unpredictable
(A6) Submit Detailed Planning Application			
Preparing and submitting the detailed planning application is a task that could be performed by certain individual members of the project team, or the architectural team.		1 Week	

Task	Expenses budget notes	Planned Duration	Weekly Variability
(B1) Develop Architectural Design			
Developing the detailed design is a vital step in the overall design process. Client input should be sought on the type of construction, the quality of materials and things like the standard of workmanship. Developing the detailed design involves co-ordinating any design work done by other consultants or specialist contractors. This task involves a combination of activities and therefore in almost all cases it would need the architectural team to carry it out.	Expenses will be incurred during this task, again primarily for the reprographics and travel: £2,100 should be allocated for these	7 Weeks – with the potential to reduce this to 5 by allocating a total expenses budget of £23,000	This is a task where weekly progress can be better or worse than planned
(B2) Supervise & Co-ordinate Full Engineering Design			
In addition to the architectural design, an engineering design needs to be developed. The engineering design will incorporate the mechanical, electrical and structural engineering aspects. This task usually requires the attention of at least the senior engineer if available on the team, i.e. someone who can really speak the languages of the various engineering groups.		3 Weeks – with the potential to reduce this to 2 Weeks by making an expenses allocation of £7,000	This is another task where weekly progress is slightly unpredictable
(B3) Liaise with School/ Education Department on Finishes			
The relevant designs should then be discussed with the client contacts. Usually, any member of the project team can do this, e.g. the senior or junior architect.	A minor allowance should be made for the expenses typically incurred on this task: no more than £1,000	1 Week	
(B4) Develop Construction Design & Management (CDM) regulations compatible workplan			
This task needs to be performed by someone familiar with the CDM regulations; presumably any member of the project team. It's more than just ticking some boxes and getting this task wrong is something people tend to only do once in their careers.		1 Week	
(B5) Agree Suppliers/ Materials with Client			
This is a fairly straightforward task, but not unimportant. It can be done by any level of architect, but is more likely to be misjudged if a less experienced resource is used.	Typically involves some fairly minor expenses – £500 in this case	1 Week	

Task	Expenses budget notes	Planned Duration	Weekly Variability
(C1) Prepare Working Drawings			
This time consuming task requires a range of skills and therefore must be staffed by either the architectural team or the joint team.	Various expenses are associated with this task, such as the reprographics; budget for £3,600 with a weekly cost overrun of £200	6 Weeks – with the potential to reduce this to 4 Weeks by allocating a total expenses budget of £25,000	Weekly progress can vary up or down on this task
(C2) Prepare Specification			
On projects like Whitchurch, the specification process can be quite complex, and it requires an experienced resource to supervise it. This task is likely to be run in parallel with Task C1, and if there was no resource conflict it might use the same team. This task needs input from the engineers as well as the architects however, and so the joint team is in principle the best resource.		3 Weeks – with the potential to reduce this to 2 Weeks by making a total expenses budget allocation of £18,000	Each week, progress can vary from a bit less to a bit more than planned
(C3) Run Internal Design Review/ Sign Off			
The senior architect would normally run the internal design review, but it has been known for other members of the project team to do this task. It is yet another trade-off therefore between the skill and cost of the resource.		1 Week	
(C4) Prepare Bills of Quantities			
The large number of drawings in a project like Whitchurch Schools means that the measurement of the project for pricing is a major task. Based on the specification documents, the Quantity Surveyor should produce this detailed set of measures in order for the competitive tenders to be sought later on. This task obviously requires the specialist skills that only a QS has.		3 Weeks – with the potential to reduce this to 2 by making an expenses budget allocation of £8,000	Weekly progress on this task is also subject to some variability
(C5) Submit Building Regulations Application			
This is a straightforward task and there are a few members of the project team who can do it.		2 Weeks	
(C6) Issue Pre-Tender Health & Safety File			
This task involves producing a document that outlines all the health & safety issues relevant to the project. The document should be easily understood by all the possible tenderers and all other contributors to the project design. It is partly based on the CDM regulations workplan (the output of task B4) and is normally produced by someone familiar with these regulations.		1 Week	

Task	Expenses budget notes	Planned Duration	Weekly Variability
(D1) Prepare Tender List			
Preparing the list of potential contractors should be done in collaboration with the client, primarily to include contractors that they may have a positive view on, and that you might have otherwise missed. The more experience that an architect has of this task the more likely they are to come up with the best list.		1 Week	
(D2) Prepare Pre-Tender Estimate			
The pre-tender estimate can be done by either an individual, or the architectural team, and quite often the QS performs this task. It does not normally take very long, but this task is important for the project team to get an immediate check and comparison against the tender responses.		1 Week	
(D3) Submit Tender Package & Respond to Queries			
A fairly straightforward, but time-consuming task that a less expensive resource should handle without increasing the chance of further delays on the overall project.		3 Weeks – can be reduced to 2 Weeks by allocating an expenses budget of £8,000	
(D4) Appraise Tender Returns/ Write Tender Report			
Often the senior architect would do this, or possibly the architectural team would get involved with carrying out the tender appraisal. In collaboration with the client, tender selection is made and then successful/unsuccessful tenders are notified.		1 Week	
(D5) Arrange Letting of Contract & Run Pre-Start Stakeholder Meeting			
Another task that, although not requiring many person days, merits the attention of an experienced team member. Junior architects can do this, but you really don't want anything to go wrong at this point.		1 Week	

RISK DESCRIPTIONS

Risk on Task A1

The initial design consultations involve getting the views of a large number of stakeholders, and there is always a chance that certain health & safety aspects of the overall project might be misjudged. An example of this is when designers miss the proximity of things like overhead power lines. A good estimate of this risk occurring would be 25%, unless the senior architect is assigned to it, in which case the probability of it occurring would be reduced to 10%. If the risk does occur, there is a good chance that the task would take a week longer.

Risk on Task A2

Task A2 is about achieving broad agreement for the scheme design across potentially a wide variety of stakeholders. There is always a chance that the local residents, for example, will object to something in the design such as wind turbines. The probability of this risk occurring is 25%, but allocating the expenses budget of £21,000 will reduce this to 20%, (in addition to shortening the overall timeframe of the task). This risk can also be mitigated by allocating an extra resource. If the risk does occur, having this extra resource would result in a much smaller chance of it adding a week to the duration, and also the maximum carbon rating would be 95%, rather than 90%.

Risk on Task A4

This task is about establishing the extent to which the existing utilities (e.g. gas, water, electricity and telecoms) are sufficient to meet the demands of the new development. There is an obvious risk of assessing this incorrectly, for example by misunderstanding the capacity, regulation compatibility, or general state of the existing utilities. The more experience the person responsible for this task has, the more likely they are to uncover the possible outcomes and avoid any surprises. It is very difficult to eliminate this risk completely, partly because it relies on some input from the utilities providers. However putting someone with a high skill on this (e.g. the senior architect) reduces the risk of it occurring from 50% to 10%. If the risk does occur, the task will almost certainly take one week longer to complete and will incur an additional cost of £6,000. There are no mitigating actions for this risk.

Risk on Task B1

The availability of staff during the architectural design task is always going to be limited, and there is a good chance (approximately 40%) that they will be unable to attend any relevant training – in this case on the carbon calculation method. This could then lead to a delay on the overall task (increasing its duration by one week), and it could also result in a reduction in the carbon rating of this task (to a maximum of 85%). If the expenses budget is £23,000 the likelihood of this risk occurring is reduced to 30%. Allocating an extra resource on the task would mean that there would only be a very small chance of it being delayed and also the maximum carbon rating would be increased to 95%.

Risk on Task B2

Task B2 is about achieving a co-ordinated and integrated design across all the various engineering inputs (e.g. structural, mechanical, electrical). This task is therefore partly about facilitating communication between these various inputs so that they are all aware of the others' perspectives and constraints. There is a risk in nearly any design project of these different inputs not fully understanding each other. Allocating anyone as an extra resource, primarily to perform this facilitation effort, would reduce the probability of this risk occurring from 25% to 10%. If the risk does occur, the task will almost certainly take a week longer, but having the extra resource on it would also reduce the chances of it actually causing a delay.

Risk on Task B4

Task B4 is about ensuring that the design plans meet the Construction Design & Management (CDM) regulations. There is an obvious risk of the plans simply not complying with these regulations, and in a project like the Whitchurch Schools, the chances of this risk occurring is 35%. In this project, allocating Contractor 2 would reduce the likelihood of this risk occurring to 10%. If the risk does occur, then the task will almost certainly take a week longer to complete, but this can be mitigated by allocating at least one high and one medium skilled resource, which would result in there only then being a very small chance of it taking longer.

Risk on Task C3

When running the internal design review, there is again a risk of missing the possible health and safety hazards that are inherent to construction projects. The chances of this risk occurring are normally quite high (45%) but this would be reduced significantly (to 10%) if the senior architect, Sam Archer, is working on the task. If the risk does occur, the task would definitely take a week longer, although if an extra resource with at least a medium skill level is allocated this would mean that the delay would probably be avoided.

Risk on Task C5

When submitting the building regulations application, there is a simple risk of it being rejected. Normally the chances of this happening are 30%, unless the carbon rating of task C1's deliverable is 100%, in which case the probability is reduced to 20%. If the application is rejected and needs to be re-submitted this would normally mean a delay of one week on the task and a supplementary cost of £5,000. The impact of this risk can be mitigated however if at least two high skilled resources are allocated to the task; if the risk then occurred, the task would not necessarily take any longer to complete and would only incur a supplementary cost of £2,500.

Risk on Task D4

When appraising the tender applications, there is a potential risk that none of the bids are satisfactory and all have to be rejected. Should this occur, there is almost certainly a delay to the task. The estimated probability of this risk happening is 20%, and if it does, it would take a week longer. The probability of this risk occurring can be reduced to 10% by ensuring that the output of task D3 (the tender package) has a carbon rating of at least 90%. The chances of the risk actually causing a delay can be reduced by allocating a high skilled or extra resource to it.

RESOURCES / PROJECT TEAM

Name	Role	Cost/Week	Experience/Skills
Sam Archer (SA)	Senior Architect	£3,000	Sam has got considerable experience of this kind of design project. She qualified as an architect six years ago and she has managed all aspects of such a project several times by now. There are certain tasks that really do merit being resourced with her level of experience, especially the tasks where client input or contact is required
John Desborough (JD)	Junior Architect	£1,300	John has worked on a few projects similar to Whitchurch. He has been with PD Global for two years. Many of the tasks that a senior architect usually performs could actually be done by someone like John, but inevitably using the less experienced resource has a downside. Checking proposals, client reviewing, submitting applications and tender packages - these are all tasks that the junior architect might perform, given the usual resource constraints
Helen LeMesurier (HL)	Quantity Surveyor	£1,800	Helen has been working at PD Global for four years, and qualified as a QS eight years ago. The tasks that the QS would typically perform during these phases of a design project would be putting together the Bills of Quantities (BoQs), and the QS also often works on the tender action tasks
Tony Callaghan (TC)	Senior Engineer	£3,400	Tony is the ideal resource to work on tasks such as the supervision and co-ordination of the engineering design
Architectural Team (AT)		£6,400	On a comparatively small scale project like the Whitchurch Schools an Architectural Team would typically be made up of 3 or 4 people. When a team is put together to work on a specific task they tend to work on it full time, hence the comparatively high cost of this resource
Joint Team (JT)		£9,000	In most projects like Whitchurch, the joint architectural and engineering team would be required to prepare the specification. The Joint Team, if allocated to this task, would typically work on it nearly full time until completion – hence they are an expensive resource, but the only one that can get this job done within a reasonable timeframe
Contractor 1 (Ct1)		£2,400	Contractor 1 has a similar skill set to a senior architect, and will have particular skills in the tender action tasks, planning applications and CDM regulations. Contractor 1 is most likely to be used if and when the senior architect is not available (e.g. if on a parallel task). There are certain tasks on a project like Whitchurch that this contractor would NOT be made responsible for: A1, A5, B3, C3, D4 and D5
Contractor 2 (Ct2)		£1,200	Contractor 2 has a similar skill set to a junior architect - e.g. fluency in the CDM regulations, but otherwise they would have at best medium skills for the design tasks, and would therefore most likely be used as an extra resource if and when an assistant is needed. Contractor 2 can only be allocated as the main resource on task B4

TASK / SKILL TABLE

Task	SKILL required	RESOURCES WITH HIGH skills	RESOURCES WITH MEDIUM skills	HOW MUCH IS TASK AFFECTED IF RESOURCE HAS MEDIUM SKILL:	
				DURATION	CARBON RATING
A1	Consultation	SA, AT	JD, TC, JT, *(Ct1)*	**	*
A2	Scheme Design	AT, JT	SA, JD, Ct1, *(Ct2)*	*****	*****
A3	Internal Reviewing	SA, AT, JT	JD, TC, Ct1		*
A4	Consultation	SA, AT	JD, TC, JT, Ct1	*	
A5	Client Reviewing	SA, AT, JT	JD, TC, *(Ct1), (Ct2)*		*
A6	Planning Application	SA, JD, AT, Ct1	*(Ct2)*	N/A	N/A
B1	Detailed Design	AT	SA, JT, Ct1	*****	*****
B2	Engineering Design	TC, JT		N/A	N/A
B3	Client Reviewing	SA, AT, JT	JD, TC, *(Ct1), (Ct2)*		
B4	CDM Regs Compliancy	SA, JD, AT, Ct1, Ct2	JT	***	***
B5	Client Reviewing	SA, AT, JT	JD, TC, Ct1, *(Ct2)*	**	****
C1	Working Drawings	AT, JT	SA, Ct1	*****	**
C2	Production Specification	JT	AT	***	*****
C3	Internal Reviewing	SA, AT, JT	JD, TC, *(Ct1)*		***
C4	Bill of Quantities	HL		N/A	N/A
C5	Planning Application	SA, JD, AT, Ct1	*(Ct2)*	N/A	N/A
C6	CDM Regs Compliancy	SA, JD, AT, Ct1, *(Ct2)*	JT	**	
D1	Tender Advising	SA, AT, Ct1	JD, *(Ct2)*	***	***
D2	Tender Estimate/Review	SA, AT, HL, Ct1	JD, JT, *(Ct2)*		
D3	Tender Estimate/Review	SA, AT, HL, Ct1	JD, JT, *(Ct2)*		*
D4	Tender Estimate/Review	SA, AT, HL, *(Ct1)*	JD, JT, *(Ct2)*	***	**
D5	Client Reviewing	SA, AT, JT	JD, TC, *(Ct1), (Ct2)*	***	

(Ct1) or (Ct2) – when in brackets they can only be allocated as an extra resource on this task

N.B. Each task requires one 'main' resource. It is possible to reduce the duration of certain tasks by allocating an 'extra' resource but this depends partly on their skill level.